

SECTION 5 - MODEL 500, 510 and 520 CMS SYSTEM INTERCONNECTION

8.5.1 GENERAL

- 8.5.1.1 The CMS System consists of the Model 500, 510 or 520 CMS, Harnesses No. 4 and No. 5 Interconnect, the CIA resident in the Controller Cabinet and the Controller. This section shall detail the interface and control requirements that mate the controller to the CMS.
- 8.5.1.2 A systems check shall consist of running the Caltrans' DAT CMS (Diagnostic and Acceptance Testing for the Changeable Message Sign) Software Program with the CMS (Complete interconnection and interface of CMS, Controller, CIA, Controller Cabinet and associated equipment).
- 8.5.1.3 Prior to the delivery of the Model 500, 510 or 520 CMS, a verification certificate shall be submitted to the Engineer. The certificate shall show that a systems check has been performed and the system has functioned properly under the Engineer's guidelines.
- 8.5.1.4 CIA AC+ power shall be connected to cabinet PDA #3 via a 3 foot NEMA Type 5-15P grounding type plug. The controller duplex receptacle shall be used for power source.

8.5.2 CMS CONTROL ISOLATION ASSEMBLY (CIA)

- 8.5.2.1 The CIA shall function as the isolation / driver interface between the Controller and the CMS, Sense light and AC voltage levels, sense the 4 power line current levels, read the Controllers Dim Level Select Lines and via selected level points control the Triac Turn On Point and provide CMS Soft Start Feature.
- 8.5.2.2 The CIA shall optically isolate, receive / drive and condition DC Logic Signals to and from the CMS ISO Module complying to RS 423 Standards at a minimum of 152.40m (500 Feet). The system shall be capable of writing to all 60 PDMs within 100 ms.
- 8.5.2.3 The CIA shall sense the 5 CIA Control Lines (Line 4 is reserved) and react as follows:

CIA CONTROL LINES				FUNCTION	RANGE
3	2	1	5		
0	0	0	0*	Power Line 1	0 - 100 AMPs *
0	0	1	0*	Power Line 2	0 - 100 AMPs *
0	1	0	0*	Power Line 3	0 - 100 AMPs *
0	1	1	0*	Power Line 4	0 - 100 AMPs *
1	0	0		Photo Cell	0 - 5 VDC
1	0	1		AC+ Line	75 - 150 VAC
1	1	0		Test	+5 VDC
1	1	1		Test	0 VDC

- Line 5 Logic 1 shall decode Power Line Range to 0 - 10 AMPs

- 8.5.2.3.1 The selected function shall present to the controller via the 8 Sense Lines its range in 256 increments (binary with Line 1 equal to the least significant bit). The Values shall be linear over the range. Sense output shall be compatible with the controller unit. The A/D convertor shall be a ADC 804 or equal with conversion triggered by a CLOCK Input. Conversion shall be completed within 250 us.
- 8.5.2.4 DIM Control shall be as called out under Specifications 2.4. The CIA shall read the Photo Cell Sensor Output and the incoming AC Voltage report to the controller. The controller shall decode the Dim Control Level via the three DL Lines as Follows:
- | LINES | FUNCTION |
|------------|--|
| 1 2 3 | |
| 0 0 0 | Turn Sign Off, NO ON PULSE |
| 1 0 0 | Adjustment Level 1 (Lowest intensity Level) |
| 010 to 110 | Adj. Levels 2 to 6 |
| 1 1 1 | Adjustment Level 7 (Highest intensity Level) |
- 8.5.2.4.1 The selected level shall be matched to a DIM Control Phase Triggering Point adjustable by an individual 10 turn (min.) discrete potentiometer accessible from the front panel The Phase Triggering Pulse shall be mirrored back to the controller.
- 8.5.2.5 Four toroidal current monitoring devices (BICRON ELECTRONICS B5303 or equal) installed on the secondary side on each of the Four Power Lines (CMS Main Disconnect) shall input via C10 Connector to the current sensing circuitry and upon request to the A/D Convertor.
- 8.5.2.6 The CIA shall upon request run a self check on the A/D Convertor - Sense Lines. A +5 VDC Request shall provide a "FF" Response. A 0 VDC Request shall provide a "00" Response.